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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,942	04/06/2001	Ray Alan Mentzer	10004068-1	6687

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EXAMINER	
AGGARWAL, YOGESH K	
ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/827,942	MENTZER, RAY ALAN	
	Examiner	Art Unit	
	Yogesh K. Aggarwal	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/26/2007 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 6, 9, 10, 16, 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobusch et al. (US Patent # 6,850,276), Gowda et al. (US Patent # 6,275,259) and further in view of Fearnside et al. (US Patent # 4,278,995).

[Claim 1]

Dobusch et al. teaches a method of correcting erroneous image signals comprising providing a signal that is working value of the gain V(x-1) that is based on the preceding sensor element P(x-1) is used for the following sensor element P(x) from a set of image signals that represent a

single capture scene of interest (col. 2 lines 63-67, col. 2 lines 30-62, col. 3 lines 10-22, Abstract, figure 1),

and digitizing an analog signal of a current pixel using said gain V(x) based on the previous value as a reference to derive a digitized signal of said current pixel within said signal range (col. 2 lines 52-54, col. 2 lines 63-67), including limiting said analog signal of said current pixel by said working value of the gain V(x) that is based on the preceding sensor element, said analog signal of said current pixel being another image signal from said set of image signals (col. 2 lines 63-67, col. 3 lines 10-22, figures 1, 3).

Dobusch teaches providing gain V(x-1) that is based on the preceding sensor element P(x-1) is used for the following sensor element P(x) but fails to teach providing a high signal and a low signal based on an image signal of a previously processed pixel.

However Gowda teaches providing a high signal and a low signal (Vmax and Vmin) based on an image signal of a previously processed pixel (col. 2 line 30-col. 3 line 10, col. 4 lines 14-22, figure 1).

Therefore taking the combined teachings of Dobusch and Gowda, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a high signal and a low signal based on an image signal of a previously processed pixel into the system of Dobusch as taught in Gowda in order to use the full dynamic range of the A/D converter thereby avoiding the overflow and underflow conditions as taught in Gowda (col. 3 line 50-col. 4 line 5).

Dobusch in view of Gowda fails to teach a multicolor pixel array. However Fearnside teaches a multicolor array (color lines sensor 20) that includes three line sensing arrays with a blue color stripe array 22, array 24 with red color stripe and array 26 with a green color stripe

(col. 3 lines 25-47, figure 2) in order to obviate the need to define a separate filter over each element of the array (col. 2 lines 18-30) thereby making the process of manufacturing the multicolor arrays easier and economical.

Therefore taking the combined teachings of Dobusch, Gowda and Fearnside, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a multicolor pixel array as taught in Fearnside so that the current pixel has the same color designation as the previously processed pixel used to digitize the current pixel when used in the system of Dobusch in view of Gowda in order to obviate the need to define a separate filter over each element of the array (col. 2 lines 18-30) thereby making the process of manufacturing the multicolor arrays easier and economical.

[Claim 2]

Gowda teaches a step of converting said image signal of said previously processed pixel to said high signal and said low signal (figure 1, Vmax and Vmin).

[Claim 3]

Gowda teaches wherein said step of converting said image signal of said previously processed pixel includes digital-to-analog converting (figure 1, DAC 110) said image signal of said previously processed pixel to said high signal and said low signal (figure 1, Vmax and Vmin), wherein said high and low signals are generated as voltages.

[Claims 9, 10]

These are apparatus claims corresponding to method claims 1 and 3 respectively. Therefore they have been analyzed and rejected based upon method claims 1, 3.

[Claim 17]

Dobusch teaches a method of correcting erroneous image signals during analog-to-digital conversion comprising a sensor array of photosensitive pixels (figure 1, pixel P1 to Pn), each of said photosensitive pixels being configured to accumulate an analog image signal when exposed to light (col. 2 lines 30-40) and an analog-to-digital converter unit (combination of 2-5) operatively coupled to said sensor array to receive analog image signals from said photosensitive pixels, said analog-to-digital converter unit comprising a digital-to-analog converter (figure 1, controller 4 will inherently have a DAC that outputs a previous gain V(x-1) that has values 4, 2, 2 etc. based upon the output of A/D converter 3). Dobusch teaches that the value of preceding gain V(x-1) is used for the following sensor to define a working range about said image signal of said previously processed pixel that represent a single capture scene of interest (col. 2 lines 63-67, col. 2 lines 30-62, col. 3 lines 10-22, Abstract, figure 1),

an analog-to-digital converter (figure 1, ADC 3), said analog-to digital converter being configured to digitize an analog signal of a current pixel (output of pixel array P1 to Pn) using said preceding gain V(x-1) as references to derive a digitized signal of said current pixel within said signal range, including limiting said analog signal of said current pixel by said high and low signals col. 2 lines 63-67, col. 3 lines 10-22, figures 1, 3).

Dobusch teaches providing gain V(x-1) that is based on the preceding sensor element P(x-1) is used for the following sensor element P(x) but fails to teach providing a high signal and a low signal based on an image signal of a previously processed pixel.

However Gowda teaches providing a high signal and a low signal (Vmax and Vmin) based on an image signal of a previously processed pixel (col. 2 line 30-col. 3 line 10, col. 4 lines 14-22, figure 1).

Therefore taking the combined teachings of Dobusch and Gowda, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a high signal and a low signal based on an image signal of a previously processed pixel into the system of Dobusch as taught in Gowda in order to use the full dynamic range of the A/D converter thereby avoiding the overflow and underflow conditions as taught in Gowda (col. 3 line 50-col. 4 line 5).

Dobusch in view of Gowda fails to teach a multicolor pixel array. However Fearnside teaches a multicolor array (color lines sensor 20) that includes three line sensing arrays with a blue color stripe array 22, array 24 with red color stripe and array 26 with a green color stripe (col. 3 lines 25-47, figure 2) in order to obviate the need to define a separate filter over each element of the array (col. 2 lines 18-30) thereby making the process of manufacturing the arrays easier and economical.

Therefore taking the combined teachings of Dobusch, Gowda and Fearnside, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a multicolor pixel array as taught in Fearnside so that the current pixel has the same color designation as the previously processed pixel used to digitize the current pixel when used in the system of Dobusch in view of Gowda in order to obviate the need to define a separate filter over each element of the array (col. 2 lines 18-30) thereby making the process of manufacturing the arrays easier and economical.

[Claim 6]

Dobusch in view of Gowda is silent as to the type of analog-to-digital converter, however Official notice is taken of the fact that it is notoriously common to have a flash analog-to-digital converter be used for digitizing a current pixel in order to make the overall process faster.

Therefore taking the combined teachings of Dobusch, Gowda and Official notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have flash analog-to-digital converter be used for digitizing a current pixel. The benefit of doing so would be because flash A/Ds have high input bandwidth and very high speeds in the 1 to 4-Gsample/s range. [As applicant has not traversed the old and well known statement above, the use of a flash analog-to-digital converter is taken as admitted prior art. See MPEP 2144.03(c)]

[Claim16]

This is an apparatus claim corresponding to method claim 6. Therefore it has been analyzed and rejected based upon method claim 6.

[Claim 21]

This claim is substantially similar to claim 16. Therefore it has been analyzed and rejected based upon claim 16.

5. Claims 4, 5, 8, 11-14, 18,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobusch et al. (US Patent # 6,850,276), Gowda et al. (US Patent # 6,275,259), Fearnside et al. (US Patent # 4,278,995) and in further view of Kim (US Patent # 6,587,144).

[Claims 4 and 5]

Dobusch, Gowda in view of Fearnside teaches all the limitations of claim 1. Furthermore, Dobusch teaches that is working value of the gain V(x-1) that is based on the preceding sensor element P(x-1) is used for the following sensor element P(x) from a set of image signals that represent a single capture scene of interest (col. 2 lines 63-67, col. 2 lines 30-62, col. 3 lines 10-22, Abstract, figure 1), but fails to teach "…. Wherein a step of comparing said analog signal of said current pixel with an analog signal of a previously processed pixel and further comprising a

step of converting said image signal of said previously processed pixel to said high signal and said low signal, wherein said high and low signals are dependent on said comparing of said analog signal of said current pixel with said analog signal of said previously processed pixel".

However Kim teaches comparing (figure 1, element 42) a present black level signal (read as current pixel signal value) and a preset black reference value (read as previously processed pixel value) to up or down values so that the DC voltage level of the signal is adjusted (col. 2 lines 12-23)[DC voltage ca be either high or low and therefore can be read as high and low signals which are dependent on the comparison between a present black level and preset black reference value].

Therefore taking the combined teachings of Dobusch, Gowda, Fearnside and Kim, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have comparing said analog signal of said current pixel with an analog signal of a previously processed pixel and further comprising a step of converting said image signal of said previously processed pixel to said high signal and said low signal, wherein said high and low signals are dependent on said comparing of said analog signal of said current pixel with said analog signal of said previously processed pixel. The benefit of doing so would be to correct the black level due to an incorrect pixel as taught in Kim (col. 2 lines 20-21).

[Claim 8]

Dobusch, Gowda in view of Fearnside teaches all the limitations of claim 1. Furthermore, Gowda teaches wherein said image signal of said previously processed pixel is a digital signal (output of ADC 104) but fails to teach "...., wherein said image signal has more bits than said digitized signal of said current pixel".

However Kim teaches that the A/d converter output has 10 bits as compared to a 6-bit black level reference value (col. 4 lines 25-30).

Therefore taking the combined teachings of Dobusch, Gowda, Fearnside and Kim, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have an image signal having more bits than said digitized signal of said current pixel. The benefit of doing so would be to vary the black reference value as needed as taught in Kim (col. 4 lines 25-26).

[Claim 11]

This is an apparatus claim corresponding to method claim 8. Therefore it has been analyzed and rejected based upon method claim 8.

[Claim 12]

Dobusch, Gowda, Fearnside in view of Kim teaches all the limitations of claim 11. Furthermore, Gowda teaches a 8-bit D/A and A/d converter but does not disclose a 10-bit D/A and 7-bit A/D converter. However Official notice is taken of the fact that a 10 bit D/A and 7-bit A/D converter is well known in the art in order to have more sensitivity. Therefore taking the combined teachings of Dobusch, Gowda, Fearnside, Kim and Official notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have used a seven-bit value. The benefit of doing so would be to have a circuit, which has high sensitivity. [As applicant has not traversed the old and well known statement above, the use of a 10 bit D/A and 7-bit A/D converter is taken as admitted prior art. See MPEP 2144.03(c)]

[Claim 13]

This is an apparatus claim corresponding to method claims 4 and 5. Therefore it has been analyzed and rejected based upon method claims 4 and 5.

[Claim 14]

Claim 14 recites what was discussed with respect to claim 12.

[Claim 18]

This claim is substantially similar to claim 11. Therefore it has been analyzed and rejected based upon claim 11.

[Claim 19]

This claim is substantially similar to claim 13. Therefore it has been analyzed and rejected based upon claim 13.

6. Claims 7, 15, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobusch et al. (US Patent # 6,850,276), Gowda et al. (US Patent # 6,275,259), Fearnside (US Patent # 4,278,995) in view of Embler (US Patent # 6,654,054).

[Claim 7]

Dobusch, Gowda in view of Fearnside teaches all the limitations of claim 1. Furthermore, Gowda teaches that the digitized signal is based upon the previously processed pixel as discussed in claim 1 but fails to teach ".... a step of adding a conversion signal to said digitized signal of said current pixel". However Embler teaches that an anti-noise signal is added to the digital signal (col. 11 lines 32-38). Therefore taking the combined teachings of Dobusch, Gowda, Fearnside and Embler, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a step of adding a conversion signal to said digitized

signal of said current pixel. The benefit of doing so would be to ensure that an appropriate noise signal is cancelled as taught in Embler (col. 11 lines 32-38).

[Claim 15]

This is an apparatus claim corresponding to method claim 7. Therefore it has been analyzed and rejected based upon method claim 7.

[Claim 20]

This claim is substantially similar to claim 15. Therefore it has been analyzed and rejected based upon claim 15.

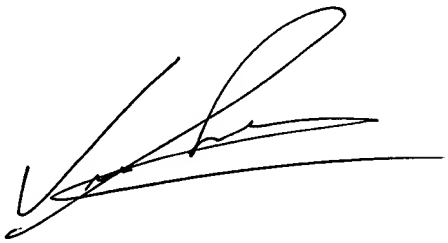
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571)-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YKA
May 26, 2007



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